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The Effect of Javanese Language Videos with a Community Based Interactive Approach Method as an Educational Instrument for Knowledge, Perception, and Adherence amongst Tuberculosis Patients

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Abstract: The long period of tuberculosis treatment causes patients to have a high risk of forgetting or stopping the medication altogether, which increases the risk of oral anti-tuberculosis drug resistance. The patient's knowledge and perception of the disease affect the patient's adherence to treatment. This research objective was to determine the impact of educational videos in the local language on the level of knowledge, perception, and adherence of tuberculosis patients in the Regional General Hospital (RSUD) Bangil. This quasi-experimental study design with a one-month follow-up allocated 62 respondents in the intervention group and 60 in the control group. The pre- and post-experiment levels of knowledge and perception were measured with a validated set of questions. Adherence was measured by pill counts. The results showed that the intervention increases the level of knowledge of the intervention group higher than that of the control group (p-value < 0.05) and remained high after one month of follow-up. The perceptions domains that changed after education using Javanese (Ngoko) language videos with the Community Based Interactive Approach (CBIA) method were the timeline, personal control, illness coherence, and emotional representations (p-value < 0.05). More than 95% of respondents in the intervention group take 95% of their pill compared to 58% of respondents in the control group (p-value < 0.05). Utilization of the local languages for design a community-based interactive approach to educate and communicate is important and effective.

Keywords: tuberculosis; knowledge; perception; adherence

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1. Introduction

Tuberculosis (TB) is an infectious disease of international concern and is prevalent in Indonesia. In 2050, it is estimated that deaths due to anti-TB drug resistance will be 10 million more than from cancer [1]. The total global losses incurred due to anti-TB drug resistance may reach US$100 trillion. The World Health Organization (WHO) Global Report 2019 states that the total number of TB cases identified in Indonesia rose from 331,703 in 2015 to 563,879 in 2018 (+70%); a 28% increase happened between 2017 and 2018 [2]. In 2016, 110,000 people, or 42 per 100,000 population, died of TB of which 32,000 (12 per 100,000 population) were caused by Multi-Drug-Resistant Tuberculosis (MDR-TB) [3]. Pasuruan Regency is among the five cities/districts with the highest number of TB cases in East Java. In 2013, the number of TB cases in Pasuruan Regency was 964, which declined to 886 cases in 2014 and rose to 1693 cases in 2015 [4]. In the Regional General Hospital (RSUD) Bangil, there were 100 tuberculosis outpatients at the pulmonary clinic each month from January to June 2018. If the number of tuberculosis patients continues to rise, Indonesia would fail to achieve the TB control targets of the 2020–2024 National Medium-Term

Development Plan (RPJMN), Millennium Development Goals (MDGs), and Sustainable Development Goals (SDGs).

Tuberculosis treatment lasts at least 6 months, depending on the clinical presentation in each patient, which causes patients to be at high risk of forgetting to take medication or dropping out of treatment. Medication non-adherence will prolong therapy duration, and increase the risk of drug resistance, morbidity, and mortality [5,6]. Resistance cannot be eliminated but can be controlled with the appropriate use of anti-TB drugs. Furthauer et al. (2013) argued that factors causing non-adherence include patients' lack of knowledge about their health, the patient's weak relationship with medical personnel, and the drugs' side effects [7].

According to Regulation of the Minister of Health No. 72 of 2016, one of the roles of clinical pharmacists in controlling anti-TB drug resistance is to provide education to patients and the public about tuberculosis and the judicious use of anti-TB drugs, in the hope of increasing patients' knowledge, which in turn shapes correct perceptions about the disease, encourages adherence and controls the number of drug resistance cases [8]. Videos in the Javanese (Ngoko) language were chosen as an instrument because a person can absorb information best and highest through sight and hearing senses; video educational material more effective than text-only [9]. A video educational tool was effective for increasing the level of outpatients' knowledge [10,11] and remained significant after three months [10]. The study was conducted at the Regional General Hospital (RSUD) Bangil because the hospital is a referral hospital in Pasuruan Regency with a high number of TB cases. Secondary data from Patient and Family Education in the pulmonary clinic of the Regional General Hospital (RSUD) Bangil in October 2017 showed educational achievements by the health personnel were not yet optimal. This was confirmed by the pharmacist at the outpatient pharmacy, who reported that many tuberculosis patients who were following treatments at the Regional General Hospital (RSUD) Bangil did not adhere to the scheduled patients' routine visits and no record was written on the pharmacy's education register. This study aimed to assess the impact of a local language educational video on the level of knowledge, perception, and adherence of tuberculosis patients in the Regional General Hospital (RSUD) Bangil.

2. Materials and Methods

Before the Javanese (Ngoko) videos were created, the researcher performed a needs assessment and education plan for respondents so that contents could be suited to the needs of tuberculosis outpatients in the Regional General Hospital (RSUD) Bangil. The Javanese (Ngoko) language was adopted because the majority of patients use the Javanese (Ngoko) language daily. The design of this research was quasi-experimental with a control group and an intervention group. The control group and the intervention group were followed for 30 days. Data collection began by screening the medical records of prospective respondents. Prospective respondents who fulfilled the inclusion and exclusion criteria were visited, and the researcher explained the purpose of the study along with giving an informed consent form to be signed by the respondents as evidence of volunteerism. Respondents who were willing to take part in the study were allocated into a control group and intervention group with a simple random sample using a lottery method. Afterward, on day-1 and 30, respondents were given questionnaires to test their levels of knowledge and perception (Figure 1). Questions on knowledge level were adapted from several studies [12–15], guideline published by Ministry of Health Indonesia [16,17] and WHO [18]. The expected achievements on knowledge level were based on Bloom's Revised Cognitive Domain [19,20], which were knowing, understanding, and applying. Questions on perception were adapted from The Revised Illness Perception Questionnaire [21]. The expected result was a change from negative perception to positive perception. The same questions (Appendix A) were given twice to the control group on day 1 and day 30, and three times to the intervention group on day 1 (before and after being provided with education) and day 30. The researcher performed tests on knowledge and perception

during patients' routine visits at Bangil District Public Hospital. An educational video in the local language about tuberculosis disease, anti-TB drugs administration, and their adverse drug events was given to educate the community (TB outpatients) in a small discussion group, named Community-Based Interactive Approach (CBIA), at the pulmonary clinic of the Regional General Hospital (RSUD) Bangil.

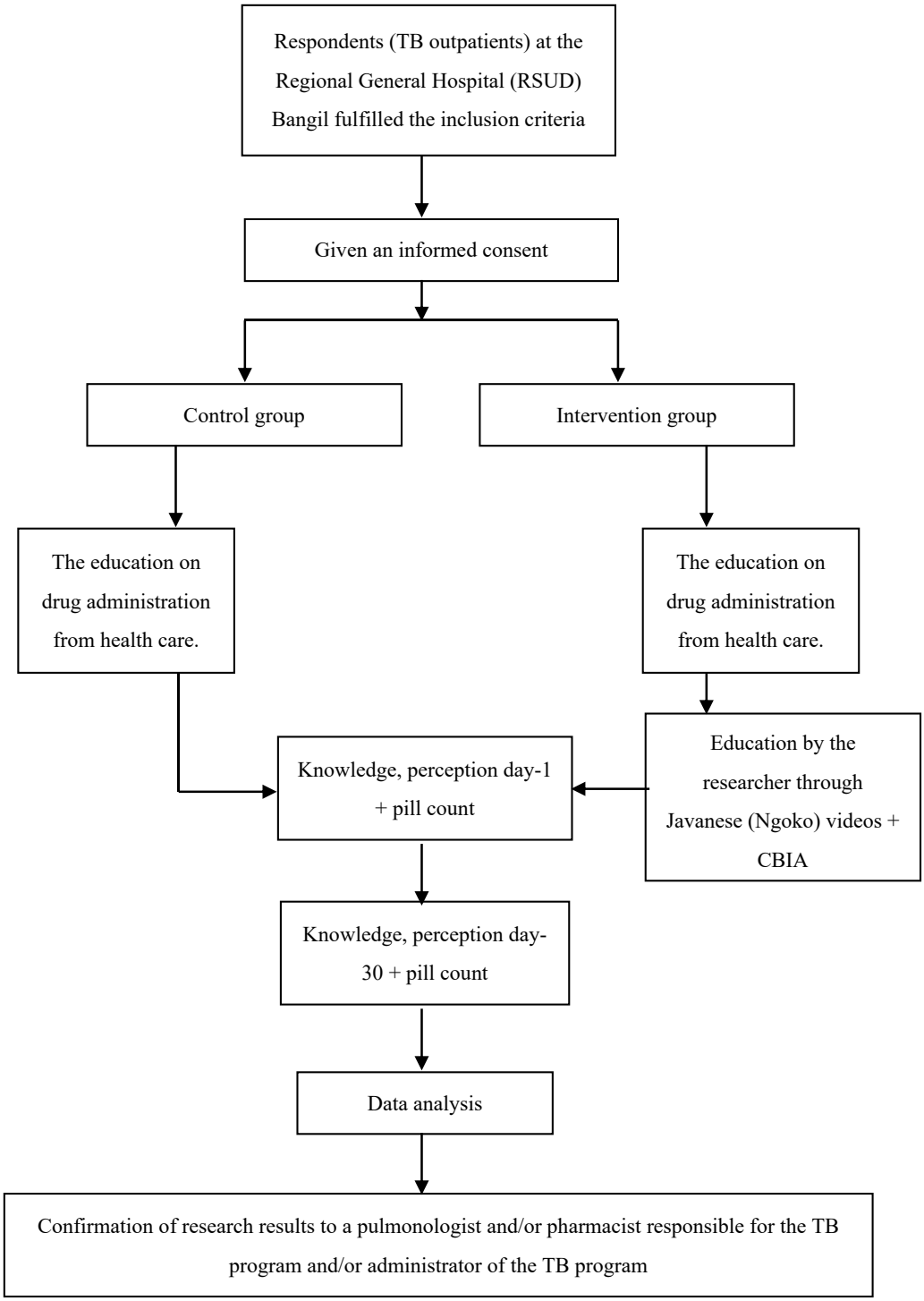

Figure 1. The Scheme of Research Work.

2.1. Respondents

Data collection for the study sample was performed from October to December 2018 at the pulmonary clinic of the Regional General Hospital (RSUD) Bangil, Pasuruan Regency (Figure 1). The recruitment flow of TB respondents can be seen in Figure 2. Inclusion criteria were tuberculosis patients >14 years who received anti-TB drug category one and two, while exclusion criteria were tuberculosis patients who were currently following the Directly Observed Treatment Short-Course (DOTS) program, patients diagnosed with schizophrenia, blindness, or deafness.

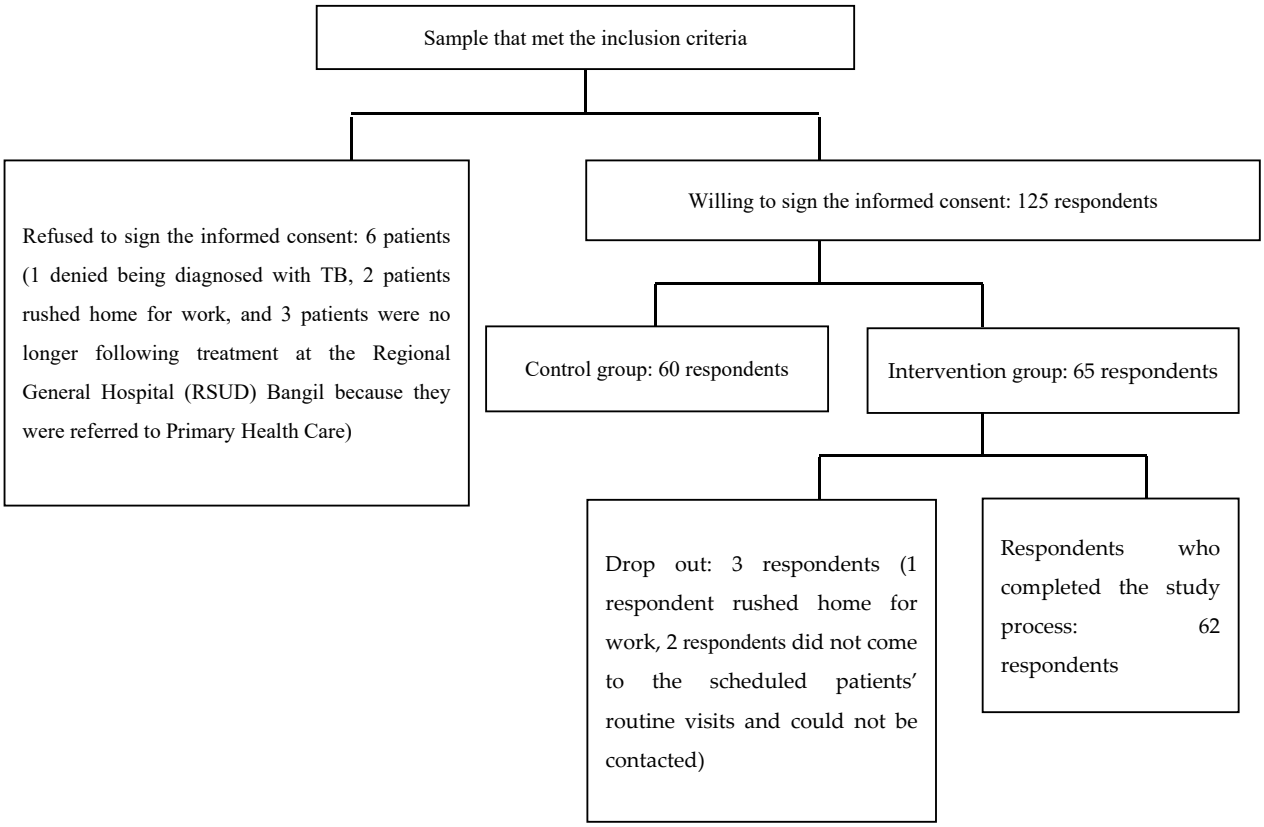

Figure 2. The Flow of TB Respondents' Recruitment at the Pulmonary Outpatient Clinic in the Regional General Hospital (RSUD) Bangil.

Education was given by the researcher to the intervention group through videos in Javanese (Ngoko) language with a CBIA approach upon the completion of their clinic visit on day 1. The educational video (CBIA) duration was six minutes. It covered information about tuberculosis disease, tuberculosis treatment (including duration, the risk of drug resistance, and adverse drug events), a reminder system, and non-pharmacology aspects. The control group received standard care, education on drug administration from health care. CBIA was done through small group discussions between 6 and 8 respondents; each group was accompanied by a counselor who facilitated the discussions. Respondents were encouraged to be more active in expressing opinions and asking questions of the informant about the discussion material, and the outcome of these small group discussions was ultimately presented to all groups. During the implementation, every CBIA education session (the control group and the intervention group), was assisted by a group of 3–4 people, comprising of a physician, pharmacist, pharmacy student, and/or medical student who had previously been briefed. To anticipate respondents forgetting the educational material, each respondent was provided with videos on his or her mobile phone. The videos were transferred from the researcher to the respondent's mobile devices (with Bluetooth, Share It, WhatsApp, or LINE platform).

To understand the effect of education on adherence, adherence to treatment in the control group and intervention group was measured by pill counts on day-1 and 30; the number of drugs taken by the patients with counting the remaining units (drugs consumed) divided by the number of drugs prescribed (prescribed drugs). The pill count calculation formula is as follows:

$$\text{Pill count} = \Sigma \text{ Drugs consumed} / \Sigma \text{ Prescribed drugs} \times 100\% \quad (1)$$

Adherence to medications on day-1 was assessed by looking at the number of drugs and medication instructions, attendance at the previously scheduled appointment as specified on the patient's identity card, Hospital Management Information System, and/or medication collection card. On day-1, the patient's medication was examined and recorded. Meanwhile, adherence to medications from day-1 to day-30 was assessed by making records on the number of drugs received by the respondent up to day-30; the remaining medications were counted by the researcher on day-30. A day before the scheduled patients' routine visits on day-30, the researcher reminded respondents via phone calls, as well as chats on WhatsApp or LINE, to bring their medications. If the respondent did not come to the scheduled appointment, the researcher would contact them by phone, as well as chat on WhatsApp or LINE. Nonetheless, if the respondent was still unable to be reached and did not attend the patients' routine visits, he or she was moved to the drop-out category. Respondents were considered to have a high level of adherence to medications if the pill count was $\geq$95%, and low if it was <95% [22]. The study results were then reported to a pulmonologist and/or pharmacist responsible for the TB program and/or administrator of the TB program, to inform and ask for suggestions relating to the results.

2.2. Data Validity Test

A needs assessment and education planning were carried out through a preliminary study in 30 respondents who met the inclusion and exclusion criteria (excluding the research sample). Accordingly, statements or terms that were unclear to the respondents were discussed together. A difficulty index analysis was used for knowledge questions. Questions number 4 (question-related to tuberculosis disease) and 7 (question-related to anti-tuberculosis drugs administration) were considered as 'easy' within the difficulty index (at least 70% of respondents answer it correctly), while questions number 1, 3, 5, 6, 9, 10, 11, and 12 belong to the 'moderate' group (40–60% of respondents answer it correctly). Meanwhile, questions number 2 (question-related to tuberculosis disease) and 8 (question-related to anti-tuberculosis drugs administration) were considered as 'difficult' within the difficulty index (only 30% of respondents answer it correctly). Construct validation was done on perception. A questionnaire regarding perception consisted of 15 questions grouped into 7 domains: timeline, illness coherence, consequences, treatment control, personal control, timeline cyclical, and emotional representations. All perception questions were valid, as the product-moment correlation coefficient was above 0.3, and reliable because the Cronbach's α test was 0.791. The Javanese (Ngoko) language on the video's script was proofread with experts and validated by tuberculosis patients who were not respondents in the research.

2.3. Statistical Analysis

To compare the level of knowledge and the level of perception among the control group and intervention group, the Mann–Whitney test was used. The Wilcoxon Signed-Rank test was used to compare the level of knowledge and the level of perception per domain in each group. The level of adherence to medications in the control group and the intervention group were compared using the chi-square test, as were the relationships between respondents' demographic factors and the level of adherence to medications in the control group and the intervention group.

2.4. Ethics Approval

The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of Politeknik Kesehatan Kementerian Kesehatan Surabaya (the Health Research Ethics Commission of the Health Polytechnic of the Ministry of Health Surabaya), Number 025/S/KEPK/V/2017. This study acquired a research permit from Badan Kesatuan Bangsa dan Politik (the National Unity and Politics Agency) Number 072/940/424.104/SUR/RES/2018 and the Regional General Hospital (RSUD) Bangil Number 445.1/2175/424.202/2018.

3. Results

The characteristic demographic patients in the intervention group were similar to patients in the control group (Table 1). There was a significant difference between the knowledge level of the control group and that of the intervention group in the knowledge of tuberculosis disease, anti-tuberculosis drug administration, and anti-tuberculosis drug adverse drug events, with a *p*-value of less than 0.05 (Table 2). The consistency of improved knowledge was maintained for one month after the intervention.

Table 1. Baseline characteristic.

Variable	Intervention Group (*n* = 60)	Control Group (*n* = 62)	*p*-Value
Gender			0.46
Male	25 (42)	30 (48)	
Female	35 (58)	32 (52)	
Age (years old)			0.69
15 to <23	9 (15)	10 (16)	
23 to <31	16 (27)	12 (19)	
31 to <39	12 (20)	7 (11)	
39 to <47	7 (12)	12 (19)	
47 to <55	6 (10)	6 (10)	
55 to <63	7 (12)	9 (15)	
63 to <71	2 (3)	5 (8)	
≥71	1 (2)	1 (2)	
Education			0.77
Primary school	20 (33)	25 (40)	
Secondary school	13 (22)	13 (21)	
High school	20 (33)	20 (32)	
University	5 (8)	2 (3)	
Other [1]	2 (3)	2 (3)	
Knowledge			
Lara TB [2]	1.68	1.65	0.80
Cara ngombe OAT [3]	1.48	1.53	0.89
Efek samping OAT [4]	0.78	0.63	0.24
Perception			
Timeline	3.13	3.27	0.51
Consequence	6.40	6.32	0.64
Personal control	5.94	5.93	0.31
Treatment control	4.11	3.95	0.12
Illness coherence	7.00	6.82	0.30

[1] pondok pesantren similar level with secondary school or high school. [2] Tuberculosis (TB) Disease. [3] Anti-TB Drugs (OAT, Obat Anti Tuberkulosis) administration. [4] Anti-TB Drugs (OAT, Obat Anti Tuberkulosis) adverse drug events.

Table 2. Average Score of Respondent's Knowledge and Perception after intervention, day-30.

Variable	Intervention Group (n = 60)	Control Group (n = 62)	p-Value
Knowledge			
Lara TB [1]	3.95	1.75	<0.001
Cara ngombe OAT [2]	3.47	1.52	<0.001
Efek samping OAT [3]	3.21	0.80	<0.001
Perception			
Timeline	2.56	3.30	<0.001
Consequence	6.26	6.38	0.70
Personal control	6.00	5.85	0.01
Treatment control	4.10	3.97	0.17
Illness coherence	3.00	6.70	<0.001

[1] Tuberculosis (TB) Disease. [2] Anti-TB Drugs (OAT, Obat Anti Tuberkulosis) administration. [3] Anti-TB Drugs (OAT, Obat Anti Tuberkulosis) adverse drug events.

Perception domains that were changed due to education through Javanese (Ngoko) videos with the CBIA method were a timeline, personal control, illness coherence, and emotional representations (p-value < 0.05) (Table 2). Perception domains that did not change after education was given were the consequence, treatment control, and timeline cyclical (p-value > 0.05).

With regards to adherence, additional education from the researcher increased the number of respondents who take 95% of their pill in the intervention group (37% increases) three times higher than in the number of the respondent in the control group (12% increases) (Table 3). There was no relationship found between respondents' demographic factors (gender, age, level of education, and occupation) and the level of adherence to medications in the control group and the intervention group (p-value > 0.05) but this may be because the group size was modest.

Table 3. Percentage of respondents' adherence after a 30-days follow-up.

Time	Intervention Group (n = 60)	Control Group (n = 62)	p-Value
Pill count, day-1	58.06%	51.67%	0.48
Pill count, day-30	95.16%	63.33%	<0.001

4. Discussion

Many factors influenced the successful delivery of this education. First, respondents had a strong desire to recover, and this heightened their need to obtain correct information about the disease. Second, placing the video on each respondent's mobile phone enabled patients to watch the videos again if they had forgotten. Other factors that may have affected knowledge include education level, information source, economic level, age, and occupation. An education increases adherence [23]. There is a positive relationship between knowledge level and adherence to taking anti-TB drugs [24–27]. Patients with a high level of knowledge had a greater chance of being adherent to medications compared to those having a low level of knowledge. A survey by Wandwalo and Morkve (2000) with regards to patients' knowledge about tuberculosis revealed that only 43.9% of patients knew the cause of tuberculosis, 54.9% of patients knew how *Mycobacterium tuberculosis* bacteria are transmitted, 82% of patients assumed that tuberculosis disease could be cured, 44.3% thought that tuberculosis disease could be prevented, 50.7% of patients knew the duration of tuberculosis treatment, and 29% of patients knew the side effects of anti-TB drugs [28].

Knowledge influences perception [29–32]. Perception about illness is the patient's experience with the disease suffered and that experience will be applied to his or her condition [33–35]. There is a positive correlation between perception and adherence to taking anti-TB drugs [36–40], and Pasek et al. (2013) found that 94% of patients with

positive perception adhere to their treatment, whereas only 13% of patients with negative perception adhere to their treatment. There are 33 out of 40 tuberculosis patients (82.5%) who had a positive perception and 27 out of 40 tuberculosis patients (67.5%) had good knowledge [41].

A greater increase of respondent's knowledge and perception in this study not only because of using a video but also because of using the local language. Language concordance will improve patient understanding, trust in the healthcare, and adherence to their treatment [42]. The implementation limitation of this study was not every healthcare had local language proficiency.

5. Conclusions

The use of videos with the local language, Javanese (Ngoko), as an educational tool effective increasing knowledge of tuberculosis disease, anti-TB drug administration, and anti-TB drug adverse drug events; understanding, and implicating as described in Bloom's taxonomy; turning negative perceptions of timeline, personal control, illness coherence, and emotional representations into positives perceptions; and increasing the adherence to tuberculosis medications.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. Written informed consent has been obtained from the patient(s) to publish this paper.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to restrictions (privacy).

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Appendix A

Knowledge questionnaire.
SOAL PENGETAHUAN TUBERKULOSIS (TBC)
Penyakit TBC (total poin = 100)

1. TBC iku mlebu penyakit nular opo gak?
   - ☐ Lara sing nular (poin = 1)
   - ☐ Dudu lara sing nular (poin = 0)
   - ☐ Gak ngerti utawa bingung (poin = 0)
2. Lara TBC iki sebabe opo?
   - ☐ Bakteri *Mycobacterium tuberculosis* (poin = 1)
   - ☐ Jamur (poin = 0)
   - ☐ Virus (poin = 0)
   - ☐ Parasit (poin = 0)
   - ☐ Gak ngerti utawa bingung (poin = 0)
3. Tondo-tondo TBC iku opo? Tau ngalami dewe? ..... Sak piro suwene? ..... (lek jawaban bener $\geq$3 = poin 1; jawaban bener <3 = 0)

☐ Metu kringet adem lek bengi
☐ Lemah, lemes, lepok
☐ Ambekan sesek lan dodo lara koyok disuduk
☐ Panas sak wulan luwih
☐ Bobote mudhun
☐ Nafsu mangan mudun
☐ Watuk riak'en rong minggu luwih lan onok getih e

4. Coro TBC nular yo opo? (lek jawaban bener ≥2 = poin 1; jawaban bener <2 = 0)

☐ Watuk ☐ Anginlek ☐ Wahing ☐ Ngidu ☐ Nafas

Coro Ngombe OAT (total poin = 100)

1. Biasane sampeyan cara ngombe obate yo opo? (lek jawaban bener ≥1 = poin 1)

☐ Sak-elinge
☐ Diombe lek wayahe watuk tok, utawa panas tok
☐ Isuk utawa bengi, sak jam sadurunge mangan (bener)
☐ Isuk utawa bengi, rong jam sak wise mangan (bener)
☐ Pas waktune utawa tetep waktune utawa pancet waktune ben dino e (bener)
☐ Gak ngerti utawa lali utawa bingung

2. Sampeyan tau lali ngombe obat TBC? (lek jawaban bener ≥1 = poin 1)

☐ Tau →Langsung ngombe dobel obat e saka biasae
☐ Tau →Langsung ngombe pas eling (bener)
☐ Tau →Kandha dokter (bener)
☐ Tau →Gak ngombe obat sampe wayahe kontrol maneh
☐ Gak tau lali (bener)
☐ Bingung

Lek tau lali, opo sing sampeyan lakukno ben gak gampang lali? (data deskriptif)

3. Jare dokter, sak piro suwene sampeyan kudu ngombe obat TBC iki? (jawaban bener poin = 1)

☐ Rong minggu luwih (poin = 0)
☐ 1 wulan (poin = 0)
☐ 2 wulan (poin = 0)
☐ 3 wulan (poin = 0)
☐ 6 wulan utawa luwih tergantung penyakite (poin = 1)

4. Opo ae macem e obat TBC sing sampeyan ombe? ngerti jeneng e? (lek jawaban bener ≥2 = poin 1; jawaban bener <2 = 0)

☐ Isoniazid (INH) ☐ Pirazinamid
☐ Rifampisin ☐ Streptomisin injeksi
☐ Etambutol

Efek Samping (total poin = 100)

1. Tondo-tondo opo ae sing perlu diwaspadai marine ngombe obat TBC? (lek jawaban bener ≥2 = poin 1; jawaban bener <2 = 0)

☐ Uyuh e abang ☐lara weteng ☐gringgingen
☐ muneg-muneg lan muntah ☐ora nafsu mangan ☐nyeri sendi
☐ budeg ☐gatel-gatel lan abang-abang nde kulit
☐ kuning ☐mripat e bureng

2. Opo sing sampeyan lakukno lek onok keluhan koyok muneg-muneg lan muntah, lara weteng, gak nafsu mangan marine ngombe obat? (jawaban bener 2 = poin 1; jawaban bener <2 = 0)

☐ Mandeg ngombe obat, wes gak gelem ngombe obat maneh sateruse
☐ Ganti ngombe obat herbal
☐ Ganti obat liyane ora kandha dokter

- ☐ Diombe isuk utawa bengi sakwise mangan (bener)
- ☐ Kandha dokter (bener)

3. Lek uyuh e abang sakwise ngombe obat, sampeyan ngerti penyebabe obat opo?
   - ☐ Rifampisin (poin = 1)
   - ☐ Isoniazid (poin = 0)
   - ☐ Etambutol (poin = 0)
   - ☐ Pirazinamid (poin = 0)
   - ☐ Streptomisin (poin = 0)
4. Opo akibat e lek ngombe obat TBC gak teratur? (lek jawaban bener ≥2 = poin 1; jawaban bener <2 = 0)
   - ☐ Ngulang pengobatane utawa tambah suwe waras e (bener)
   - ☐ Obat e gak mempan maneh (bener)
   - ☐ Penyakit e tambah akeh (bener)
   - ☐ Gak ngerti utawa bingung

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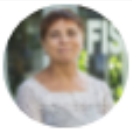
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Disposal Practices of Unused and Leftover Medicines in the Households of Dhaka Metropolis

by **Mst. Marium Begum, Sanzana Fareen Rivu, Md. Mahmud Al Hasan, Tasnova Tasnim Nova, Md. Motiar Rahman, Md. Abdul Alim, Md. Sahab Uddin, Azharul Islam, Nurnahar, Nuzhat Tabassum, Md. Marufur Rahman Moni, Rehnuma Roselin, Munny Das, Rayhana Begum** and **Md. Sohanur Rahman**

Pharmacy **2021**, *9*(2), 103; https://doi.org/10.3390/pharmacy9020103 - 20 May 2021

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Abstract **Background:** This fact-finding study aimed to attain an overall idea and knowledge about medicine disposal practices in Dhaka Metropolitan households. **Methods:** This mixed study (both quantitative and qualitative) was orchestrated to inspect the household leftover medicine disposal pattern's governing status. A cross-sectional survey [...] Read more.

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Community Pharmacy Minor Ailment Service (PMAS): An Untapped Resource for Children and Their Carers

by Tami Benzaken, Godwin Oligbu, Michael Levitan, Subrina Ramdarshan and Mitch Blair

Pharmacy **2021**, *9*(2), 102; https://doi.org/10.3390/pharmacy9020102 - 17 May 2021

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Opioid-Induced In-Hospital Deaths: A 10-Year Review of Australian Coroners' Cases Exploring Similarities and Lessons Learnt

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by Jon C. Schommer, Anthony W. Olson, SuHak Lee, Caroline A. Gaither and Stephen W. Schondelmeyer

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COVID the Catalyst for Evolving Professional Role Identity? A Scoping Review of Global Pharmacists' Roles and Services as a Response to the COVID-19 Pandemic

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(This article belongs to the Special Issue Pharmacist Services II)

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by Syed Faisal Zaidi, Muhannad Wael Baroom, Adil Ibrahim Hanbashi, Abdulrahman Abdulaziz Alkhaibari, Ahmed Omar Yahya, Muath Alsalmi, Rakan Alotaibi, Abdulaziz Nagro, Muhammad Anwar Khan and Asim Muhammed Alshanberi

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A Methodological Assessment of Pharmacist Therapeutic Intervention Documentation (TID) in a Single Tertiary Care Hospital in Jeddah, Kingdom of Saudi Arabia

by Ali F. Alwadie, Anjum Naeem, Meaad Almazmomi, Meshail A. Baswaid, Yahya A. Alzahrani and Abdullah M. Alzahrani

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by Nardine Nakhla and Anastasia Shiamptanis

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Australian Community Pharmacy Harm-Minimisation Services: Scope for Service Expansion to Improve Healthcare Access

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Distributing Publicly-Funded Influenza Vaccine—Community Pharmacies' Perspectives on Acquiring Vaccines from Public Health and from Private Distributors in Ontario, Canada

by Joseph Fonseca, Richard Violette, Sherilyn K. D. Houle and Nancy M. Waite

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by Andrew Bartlett, Carl R. Schneider, Jonathan Penm and Ardalan Mirzaei

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Perceptions of Independent Pharmacist Prescribing among Health Authority- and Community-Based Pharmacists in Northern British Columbia

by Jordan Lewis, Arden R. Barry, Katie Bellefeuille and Robert T. Pammett

Pharmacy 2021, *9*(2), 92; https://doi.org/10.3390/pharmacy9020092 - 23 Apr 2021

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Feedback for Learning in Pharmacy Education: A Scoping Review

by Nicholas R. Nelson, Rebecca B. Carlson, Amanda H. Corbett, Dennis M. Williams and Denise H. Rhoney

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by Rie Nakajima, Fumiyuki Watanabe and Miwako Kamei

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by Andrew Bzowyckyj, Bridget Bradley, Pauline Cawley, Brandon Nuziale and Sarah White

Pharmacy 2021, *9*(2), 89; https://doi.org/10.3390/pharmacy9020089 - 22 Apr 2021

Abstract Doctor of Pharmacy (PharmD) programs continually engage in curricular redesign to ensure practice readiness of graduates. With ever-increasing demands on clinical competency and curricular time, it is important to be intentional when determining curricular priorities and prioritize contemporary pharmacist practice. This paper describes [...] Read more.

(This article belongs to the Special Issue An International Professional Mandate: Pharmacy Clinical Competency)

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Medicines as Common Commodities or Powerful Potions? What Makes Medicines Reusable in People's Eyes

by Monica Chauhan, Hamza Alhamad, Rachel McCrindle, Terence K. L. Hui, R. Simon Sherratt and Parastou Donyai

Pharmacy 2021, 9(2), 88; https://doi.org/10.3390/pharmacy9020088 - 20 Apr 2021

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Abstract Background: Medicines reuse involves dispensing quality-checked, unused medication returned by one patient for another, instead of disposal as waste. This is prohibited in UK community pharmacy because storage conditions in a patient's home could potentially impact on the quality, safety and efficacy of [...] Read more.

(This article belongs to the Special Issue Medicines Reuse)

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Enhancing Student Knowledge of Diabetes through Virtual Choose Your Own Adventure Patient Case Format

by Tyler Marie Kiles, Elizabeth A. Hall, Devin Scott and Alina Cernasev

Pharmacy 2021, 9(2), 87; https://doi.org/10.3390/pharmacy9020087 - 20 Apr 2021

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Abstract Educational strategies to teach pharmacy students about diabetes are necessary to prepare future pharmacists to manage complex patients. The Choose Your Own Adventure (CYOA) patient case format is an innovative activity that presents a patient case in an engaging way. The objectives of [...] Read more.

(This article belongs to the Special Issue Pharmacy Education Development)

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The Effect of Javanese Language Videos with a Community Based Interactive Approach Method as an Educational Instrument for Knowledge, Perception, and Adherence amongst Tuberculosis Patients

by Fauna Herawati, Yuni Megawati, Aslichah, Retnosari Andrajati and Rika Yulia

Pharmacy 2021, 9(2), 86; https://doi.org/10.3390/pharmacy9020086 - 18 Apr 2021

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Abstract The long period of tuberculosis treatment causes patients to have a high risk of forgetting or stopping the medication altogether, which increases the risk of oral anti-tuberculosis drug resistance. The patient's knowledge and perception of the disease affect the patient's adherence to treatment. [...] Read more.

(This article belongs to the Special Issue Pharmacist-Led Antimicrobial Stewardship)

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Open Access Commentary

Stakeholder Views on the Idea of Medicines Reuse in the UK

by Parastou Donyai, Rachel McCrindle, Terence K. L. Hui and R. Simon Sherratt

Pharmacy 2021, 9(2), 85; https://doi.org/10.3390/pharmacy9020085 - 16 Apr 2021

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Abstract People's views about medicines reuse are being examined in a handful of qualitative studies and this commentary adds to that work by drawing on our own discussions with groups of stakeholders in the UK in the past two years. The reuse of medicines [...] Read more.

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Addressing Barriers to HIV Point-of-Care Testing in Community Pharmacies

by Kimberly McKeirnan, Sorosh Kherghehpoush, Angie Gladchuk and Shannon Patterson

Pharmacy 2021, *9*(2), 84; https://doi.org/10.3390/pharmacy9020084 - 16 Apr 2021

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Abstract Significant numbers of human immunodeficiency virus (HIV) infections are transmitted unknowingly, making efforts to increase HIV testing accessibility crucial. As trusted healthcare providers, pharmacists can increase accessibility of HIV screening and referral services. However, challenges with lack of private counseling and testing space, [...] Read more.

(This article belongs to the Special Issue The Role of Community Pharmacists in Public Health II)

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The Knowledge and Perceptions of Florida Pharmacists in Administering Inactivated Influenza Vaccines to Pregnant Women

by Oluyemisi Falope, Cheryl Vamos, Ricardo Izurieta, Ellen Daley and Russell S. Kirby

Pharmacy 2021, *9*(2), 83; https://doi.org/10.3390/pharmacy9020083 - 16 Apr 2021

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Abstract Background: Influenza vaccine rates in pregnant women remain suboptimal despite the recommendations from healthcare organizations. Though pharmacists can provide immunization services as a result of the standing order, few studies have examined the role of the pharmacist in providing immunization to pregnant women [...] Read more.

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Knowledge and Attitude of Pharmacy Students toward People with Mental Illnesses and Help-Seeking: A Cross-Sectional Study from Saudi Arabia

by Saud Alsahali

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Abstract People with mental illnesses (MIs) face several challenges in addition to their disease. People's negative views of those with MIs impact patients' decisions to seek professional help. The aims of this study were to assess pharmacy students' attitudes toward people with MIs and [...] Read more.

(This article belongs to the Special Issue Addiction and Mental Health in Pharmacy)

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Experiential Learning in a Gamified Pharmacy Simulation: A Qualitative Exploration Guided by Semantic Analysis

by Denise L. Hope, Gary D. Rogers, Gary D. Grant and Michelle A. King

Pharmacy 2021, *9*(2), 81; https://doi.org/10.3390/pharmacy9020081 - 15 Apr 2021

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Abstract Experiential learning is an important component of pharmacist education and is primarily achieved through supervised placement or simulation. This study explored senior pharmacy students' experiential learning in an extended, immersive, gamified simulation, conducted as a capstone learning activity toward the end of their [...] Read more.

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Creating Standardized Tools for the Pharmacist-Led Assessment and Pharmacologic Management of Adult Canadians Wishing to Quit Smoking: A Consensus-Based Approach

by Kristi Butt and Nardine Nakhla

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Abstract Tobacco use continues to be recognized as the single most preventable cause of death worldwide. As the gatekeepers of and experts on pharmacotherapy, pharmacists play a vital role in facilitating smoking cessation. While existing frameworks have enabled pharmacists to provide smoking cessation services [...] Read more.

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Open Access Editorial

Medication Experiences

by Jon C. Schommer

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Development and Content Validation of an Instrument to Measure Medication Self-Management in Older Adults

by Tejal Patel, Aidan McDougall, Jessica Ivo, Jillian Carducci, Sarah Pritchard, Feng Chang, Sadaf Faisal and Catherine Lee

Pharmacy 2021, 9(2), 78; https://doi.org/10.3390/pharmacy9020078 - 11 Apr 2021

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Abstract Background: For older adults, the capacity to self-manage medications may be limited by several factors. However, currently available tools do not permit a comprehensive assessment of such limitations. The Domain Specific Limitation in Medication Management Capacity (DSL-MMC) was developed to address this need. [...] Read more.

(This article belongs to the Section Clinical Pharmacy)

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Public Attitudes towards Medicinal Waste and Medicines Reuse in a 'Free Prescription' Healthcare System

by David McRae, Abigail Gould, Rebecca Price-Davies, Jonathan Tagoe, Andrew Evans and Delyth H. James

Pharmacy 2021, 9(2), 77; https://doi.org/10.3390/pharmacy9020077 - 08 Apr 2021

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Abstract This study investigates public attitudes towards medicinal waste and medicines reuse within a 'free prescription' healthcare system. A quantitative online survey was employed in a sample drawn from the population of Wales, where prescription medicines have been 'free' since 2007. Qualitative interviews informed [...] Read more.

(This article belongs to the Special Issue Medicines Reuse)

Open Access Article

A Questionnaire-Based Survey to Assess the Level of Knowledge and Awareness about Drug–Food Interactions among General Public in Western Saudi Arabia

by Syed Faisal Zaidi, Rayan Mgarry, Abdullah Alsanea, Sakar Khalid Almutairi, Yaser Alsinnari, Saad Alsobaei and Kanwal Ahmed

Pharmacy 2021, 9(2), 76; https://doi.org/10.3390/pharmacy9020076 - 08 Apr 2021

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Abstract **Introduction:** Various drug–food interactions exist that may hinder treatment and can sometimes be lethal. Our aim was to assess the level of public knowledge and awareness in Jeddah city, Western Saudi Arabia, about drug–food interactions, along with the effects of demographics on their [...] Read more.

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A Novel Approach to Pharmacy Practice Law Instruction

by Matthew Deneff, Lisa M. Holle, Jill M. Fitzgerald and Kathryn Wheeler

Pharmacy 2021, 9(2), 75; https://doi.org/10.3390/pharmacy9020075 - 03 Apr 2021

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Abstract Pharmacy law instruction is often taught as a didactic course; however practical application of pharmacy law is a main component of pharmacy practice. Technology-based simulations are becoming more frequently used to enhance didactic pharmacy education. The goal of this study was to evaluate [...] Read more.

(This article belongs to the Special Issue Technology-Enhanced Pharmacy Teaching and Learning Strategies)

Open Access Commentary

Pharmacy Practice in High-Volume Community Settings: Barriers and Ethical Responsibilities

by Christopher T. Owens and Ralph Baergen

Pharmacy 2021, 9(2), 74; https://doi.org/10.3390/pharmacy9020074 - 03 Apr 2021

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Abstract Pharmaceutical care describes a philosophy and practice paradigm that calls upon pharmacists to work with other healthcare professionals and patients to achieve optimal health outcomes. Among the most accessible health professionals, pharmacists have responsibilities to individual patients and to public health, and this [...] Read more.

(This article belongs to the Special Issue Pharmacists' Job Satisfaction)

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A Message from the Editor-in-Chief for *Pharmacy*—A Journal of Pharmacy Education and Practice

by Jon C. Schommer

Pharmacy 2021, 9(2), 73; https://doi.org/10.3390/pharmacy9020073 - 31 Mar 2021

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Abstract Dear Reader of *Pharmacy*, [...] Full article

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Predisposing, Enabling, and Need Factors Associated with the Choice of Pharmacy Type in the US: Findings from the 2015/2016 National Consumer Survey on the Medication Experience and Pharmacists' Roles

by Mohamed Rashrash, Suhila Sawesi, Jon C. Schommer and Lawrence M. Brown
Pharmacy 2021, 9(2), 72; https://doi.org/10.3390/pharmacy9020072 - 28 Mar 2021
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Abstract Background: Knowing the type of pharmacy used by the patient is meaningful to the pharmacist. Previous studies have assessed different factors predicting the kind of pharmacy selection and reached inconsistent findings. Objectives: To identify patient and health-related factors associated with pharmacy type selection. [...] Read more.
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Open Access Systematic Review

Systematic Review of L-Arginine for the Treatment of Hypoactive Sexual Desire Disorder and Related Conditions in Women

by Nicole E. Cieri-Hutcherson, Andrea Jaenecke, Ajeet Bahia, Debra Lucas, Ann Oluloro, Lora Stimmel and Timothy C. Hutcherson
Pharmacy 2021, 9(2), 71; https://doi.org/10.3390/pharmacy9020071 - 27 Mar 2021
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Abstract This systematic review evaluates the efficacy and safety of L-arginine alone or in combination for the treatment of women with hypoactive sexual desire disorder (HSDD) or related conditions, such as female sexual interest/arousal disorder and female sexual arousal disorder. Medline, Embase, International [...] Read more.

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Open Access Review

Strategies to Inspire Students' Engagement in Pharmacology Courses

by Hussein N. Rubaiy
Pharmacy 2021, 9(2), 70; https://doi.org/10.3390/pharmacy9020070 - 26 Mar 2021
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Abstract Pharmacology is a distinct discipline and offers core knowledge to broaden student programs in the provision of health care (medicine, nursing, pharmacy, and others) as well as research-oriented programs (biosciences and biomedical). Therefore, knowledge and information on topics such as prescribing medication, drug [...] Read more.
(This article belongs to the Section Pharmacy Education and Student / Practitioner Training)

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Open Access Review

Current Knowledge about Providing Drug–Drug Interaction Services for Patients—A Scoping Review

by Tora Hammar, Sara Hamqvist, My Zetterholm, Päivi Jokela and Mexhid Ferati
Pharmacy 2021, 9(2), 69; https://doi.org/10.3390/pharmacy9020069 - 24 Mar 2021
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Abstract Drug–drug interactions (DDIs) pose a major problem to patient safety. eHealth solutions have the potential to address this problem and generally improve medication management by providing digital services for health care professionals and patients. Clinical decision support systems (CDSS) to alert physicians or [...] Read more.
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